The claims have been amended to no longer recite any multiple dependencies. Further, new Claims 22-24 are also presented for examination. New Claims 22-24 are deemed to be self-evident from the original disclosure, including the originally-filed Claims 1-21 and thus are not deemed to raise any issues of new matter.

The Abstract has been amended by the present response to no longer recite any reference numerals.

The present application is believed to be in condition for a full and thorough examination on the merits. An early and favorable consideration of the present application is hereby respectfully requested.

Respectfully submitted,

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IN THE SPECIFICATION

Page 4, lines 19-27, please replace the paragraph with the following:

--From a first aspect, the present invention is a stage unit that is equipped with a driving unit [(50)] including a mover [(51)] and a stator [(60)]; and a reaction canceling mechanism [(45X1, 45X2, 45Y1, 45Y2, 63C1, 63C2, 63C3, 63C4, 19, 22)] to apply to the stator [(60)] a force canceling a reaction acting on the stator [(60)] by electromagnetic interaction. This stage unit is referred to as a "first stage unit of the present invention" hereafter.--

Page 7, lines 20-28, please replace the paragraph with the following:

--The driving unit which generates the drive force for the mover by electromagnetic interaction is so structured that, for example, the stator has an armature unit including a plurality of armature coils, which are arranged in the shape of a matrix in a predetermined plane and have current paths almost parallel to the predetermined plane, and the mover has a driving magnetic pole unit to generate a magnetic flux having a direction crossing the predetermined plane.--

Page 8, lines 1-24, please replace the paragraph with the following:

--In the first stage unit of the present invention equipped with this driving unit, the reaction canceling mechanism is so structured that reaction canceling magnetic pole units to generate a magnetic flux having a direction crossing the current paths of armature coils

disposed on four corners of the armature unit and a control system that controls the direction and amplitude of currents supplied for the armature coils disposed on four corners of the armature unit are equipped. In this case, by the control system controlling the direction and amplitude of currents supplied for the armature coils disposed on four corners of the armature unit and the electromagnetic interaction between magnetic field induced by the magnetic pole units and the currents flowing in the armature coils disposed on four corners of the armature unit, the force canceling the reaction is applied to the stator along the same predetermined plane as the plane that the reaction is along. Accordingly, four forces along a predetermined plane, which have respective predetermined directions in the four fixed points of the stator and have magnitudes corresponding to the reaction, are applied with good controllability and the reaction can be canceled very accurately.--

Page 9, lines 11-24, please replace the paragraph with the following:

--From a second aspect, the present invention is a method of making a stage unit comprising a process to provide a driving unit including the mover and the stator; and a process to provide the reaction canceling mechanism to apply the force canceling the reaction, which is induced by the driving of the mover and is acting on the stator, to the stator by the electromagnetic interaction. According to this, by providing the driving unit and the reaction canceling mechanism and combining these and other elements mechanically, electrically, and optically as the need arises, the first stage unit of the present invention is made.--

Page 9, line 25, through page 10, line 14, please replace the paragraph with the following:

--From a third aspect, the present invention comprises the armature unit including a plurality of armature coils, which are arranged in the shape of a matrix on the predetermined plane and whose current paths are almost parallel to the predetermined plane; the magnetic

pole unit having a plurality of magnets magnetized in directions not perpendicular to the predetermined plane and two-dimensionally generating an alternating magnetic field with a period of 4P/3 in two axis-directions perpendicular to each other practically without generating any magnetic field in an area opposite to the armature unit [(61)]; and a current driving unit [(22)] to move the magnetic pole unit relatively to the armature unit in a plane parallel to the predetermined plane by supplying currents to the armature coils [(63)] respectively. Hereinafter, this stage unit is referred to as a "second stage unit of the present invention".--

Page 10, line 25, through page 11, line 9, please replace the paragraph with the following:

--The second stage unit of the present invention can further comprise a magnetic member [(62)] supporting the armature coils in a side opposite to the magnetic pole unit. In such a case, a magnetic circuit is structured through the magnetic pole unit and the magnetic member, thereby a steady magnetic circuit having a low magnetic resistance can be structured. Therefore, a magnetic flux having high flux density can be generated in the positions of the armature coils. Incidentally, as a material for the magnetic member, one having high electric resistance, high saturation magnetic flux density, low magnetic hysteresis, and low coercive force is preferred.--

Page 11, line 10, through page 12, line 3, please replace the paragraph with the following:

--Also, the second stage unit of the present invention can further comprise a flat-plate-like shaped member [(68)] disposed between the armature unit and the magnetic pole unit and made of a non-magnetic and non-conductive material. In such a case, when structuring the magnetic pole unit so that it is not contacting the armature unit by an air-bearing system, an air [blew] <u>blown</u> out of the magnetic pole unit is [blew] <u>blown</u> on the flat-

plate-like shaped member, thereby the magnetic pole unit and the flat-plate-like shaped member, eventually the armature unit can be non-contacting each other. Furthermore, because the flat-plate-like shaped is non-magnetic and non-conductive, the magnetic flux generated by the magnetic pole unit is not affected. Accordingly, an easy implementation of relative move at high speed by a small driving force is possible. Incidentally, [as] a non-magnetic material means a material having magnetic permeability small enough compared with a magnetic material such as iron, etc. and almost equal to that of the air. Furthermore, a non-conductive material means a material having conductance small enough compared with a conductive material such as copper, etc. and almost equal to that of the air.--

Page 12, lines 12-27, please replace the paragraph with the following:

--Furthermore, the second stage unit of the present invention comprises a position detection system [(31)] to detect the positional relation between the magnetic pole unit [(51)] and the armature unit [(61)]; and a control unit (controller)[(20)] to control at least one of the value and direction of each of currents supplied for the respective armature coils [(63)] via the current driving unit [(22)] based on detection results by a position detection [(31)]. In such a case, the relative position and the relative speed between the magnetic pole unit and the armature unit can be controlled by controlling the value and direction of the respective currents flowing in the armature coils based on position information (speed information) obtained by the position detection system with respect to the magnetic pole unit and the armature unit.--

Page 13, line 9, through page 14, line 3, please replace the paragraph with the following:

--From a fourth aspect, the present invention is a making method comprising a process to provide the armature unit [(61)] including a plurality of armature coils [(63)] having a current path almost parallel to the predetermined plane and being arranged in the

shape of a matrix on the predetermined plane; a process providing the magnetic pole unit [(51)] having a plurality of magnets [(55, 56, 57N, 57S, 58N, 58S)] magnetized in directions not perpendicular to the predetermined plane and two-dimensionally generating an alternating magnetic field with a period of 4P/3 in two axis-directions perpendicular to each other practically without generating any magnetic field in an area opposite to the armature unit; and a process providing a current driving unit [(22)] to move the magnetic pole unit [(51)] relatively to the armature unit [(61)] in a plane parallel to the predetermined plane by supplying currents for the armature coils [(63)] respectively. According to this, by providing the armature unit, the magnetic pole unit and the driving unit, and then combining and adjusting these and other elements mechanically, electrically, and optically as the need arises, the second stage unit of the present invention is made.--

Page 14, lines 4-15, please replace the paragraph with the following:

--In this case, furthermore, it is possible to include a process to provide the position detection system [(31)] to detect a positional relation between the magnetic pole unit [(51)] and the armature unit [(61)]; and a process to provide the control unit [(20)] to control at least one of the value and direction of each of currents supplied for the respective armature coils [(63)] through the current driving unit [(22)] based on detection results by a position detection [(31)]. In such a case, a stage unit, in which the relative position and the relative speed between the magnetic pole unit and the armature unit can be controlled, can be made.--

Page 14, line 27, through page 15, line 4, please replace the paragraph with the following:

--From a fifth aspect, out of exposure apparatuses that expose the substrate by irradiating an energy beam and transfer a predetermined pattern onto the substrate, the present invention is an exposure apparatus having a feature of comprising a stage unit [(30)] as a position control unit to control the position of the substrate.--

Page 15, lines 10-27, please replace the paragraph with the following:

--From a sixth aspect, out of making methods of an exposure apparatus that exposes a substrate [(W)] by irradiating an energy beam and transfers an predetermined pattern onto the substrate [(W)], the present invention is a method of making the stage unit [(30)] by providing the driving unit [(50)] including the mover [(51)] and the stator [(60)], and the reaction canceling mechanism [(45X1, 45X2, 45Y1, 45Y2, 63C1, 63C2, 63C3, 63C4, 19, 22)] to apply the force canceling the reaction, which is induced by the driving of the mover [(51)] and is acting on the stator [(60)], to the stator [(60)] by the electromagnetic interaction; and an exposure apparatus making method including the disposing of the stage unit [(30)] as a position control apparatus to control the position of the substrate. According to this, an exposure unit comprising the first stage unit of the present invention as a position control apparatus to control the position of the substrate is made.--

Page 15, line 28, through page 16, line 26, please replace the paragraph with the following:

--From a seventh aspect, out of making methods of an exposure apparatus that exposes a substrate [(W)] by irradiating an energy beam and transfers an predetermined pattern onto the substrate [(W)], the present invention is a method of making the stage unit [(30)] by providing the armature unit [(61)] including a plurality of armature coils [(63)] that are arranged in the shape of a matrix on the predetermined plane and have current paths almost parallel to the predetermined plane, the magnetic pole unit [(51)] having a plurality of magnets [(55, 56, 57N, 57S, 58N, 58S)] magnetized in directions not perpendicular to the predetermined plane and two-dimensionally generating an alternating magnetic field with a period of 4P/3 in two axis-directions perpendicular to each other, between the armature coils [(63)] and itself, practically without generating any magnetic field in an area opposite to the armature unit [(61)], and the current driving unit [(22)] to move the magnetic pole unit [(51)]

relatively to the armature unit [(61)] in a plane parallel to the predetermined plane by supplying currents for the armature coils [(63)] respectively; and an exposure apparatus making method including the disposing of the stage unit [(30)] as a position control apparatus to control the position of the substrate. According to this, an exposure unit comprising the second stage unit of the present invention as a position control apparatus to control the position of the substrate is made.--

IN THE CLAIMS

--4. (Amended) The stage unit according to claim 2[or 3], wherein the reaction canceling mechanism generates forces, which cancel the reaction as a whole and have respective predetermined directions, in at least three points of the stator.

9. (Amended) The stage unit according to claim 7[or 8], wherein the reaction canceling magnetic pole units generate forces perpendicular to one another on the neighboring corners of the armature unit.

15. (Amended) The stage unit according to [one of]claim 11 [to 14]further comprising:

a position detection system that detects the positional relation between the magnetic and the armature unit; and

a controller that controls at least one of the value and direction of currents supplied to the respective armature coils via the current driver according to the detection results of the position detection system.

19. (Amended) An exposure apparatus that transfers a predetermined pattern onto a wafer by irradiating an energy beam and exposing the wafer, comprising:

a stage unit according to claim 1 [or 11]as the position controller to control the position of the wafer.--

Claims 22-24 (New).

IN THE ABSTRACT

--By applying a force to cancel a reaction acting on a stator [(60)] due to driving of a mover [(51)] to the stator by an electromagnetic interaction generated between reaction canceling magnetic pole units [(45X1, 45X2, 45Y1, 45Y2)] and armature coils [(63)'s], and by having a magnetic pole unit, which constitutes the mover, composed by combining magnets having such magnetization-directions that their magnetic flux are toward the stator and magnets having magnetization-directions crossing the aforementioned magnetization-directions without using yoke material for the mover to be light weight, the vibration of the stator can be prevented even upon the high speed drive of the mover. Therefore, a highly precise positioning control can be performed while moving a placed sample [(W)] at high speed.--